SPEECH TWO: REINVIGORATING KYOTO

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Mr. Secretary-General, Distinguished Delegates, and My Fellow Americans:

Today I speak with you about a grave threat to our prosperity. Addressing this challenge will tax our ability to work in unison as a community of nations. We must prevail, and time is short.

The danger is global climate change, and I come today to speak about why it is different from anything we have addressed before—and what it demands of us, the community of nations and citizens of the planet.

Climate change is unlike the threat of global nuclear war, a subject that occupied this body throughout the Cold War, because its solution does not lie merely in the hands of a few powerful states. Nor is climate change like most environmental problems in our past, which we have solved mainly by inventing new devices to bolt on our tailpipes and smokestacks. And the challenge of climate change is unlike terrorism, which we are addressing by working together to isolate and extinguish rogue elements.

Global climate change is different because the main cause—carbon dioxide from burning fossil fuels—is intrinsic to the metabolism of our modern economy. Fossil fuels power our prosperity. Fixing this problem requires rebuilding our industrial engine. The effort must be global, because all nations cause the emissions that lead to climate change. And we must find ways to make this transformation in a manner that is compatible with the markets and institutions that govern our industrial societies.

To start, we must understand why the challenge of climate change merits a response. One of many areas in which the United Nations system has provided leadership on this issue is in its creation, in 1988, of the Intergovernmental Panel on Climate Change—the IPCC.

This panel follows a long and distinguished tradition in the UN system of applying science to modern problems. The panel doesn't do the science, nor should it—the world's nations already amply fund and coordinate an impressive program of scientific research. The United States alone spends nearly $2 billion per year on climate science, and we will continue to increase our investment. The IPCC's contribution is to ensure a fair and balanced assessment by engaging thousands of scientists from around the world. The present head of the IPCC is an Indian economist; before him was an American atmospheric chemist who had been born in Britain, and the first head was a Swedish geochemist. The IPCC is the United Nations at its best—a vehicle for engagement and dialogue on the merits of ideas, regardless of nationality.

The message from the IPCC's admirable work is unmistakable. The problem of climate change is real. Temperatures are rising. The year 2003 was the third hottest on record; the 1990s were the hottest decade, by far, of the last one thousand years. Although changing temperatures are also the product of natural cycles, the human fingerprint is unmistakable.

It's not just temperature. Most other indicators of changing climate are also moving as the theory would expect. Satellites that are monitoring northern countries find that over just a decade the spring thaw has arrived a full week earlier, on average. Studies that have carefully culled the reports from thousands of amateur birdwatchers show that migratory birds arrive in their summer grounds earlier and leave later. In northern Alaska, the tundra once remained frozen solid for two hundred days per year; now that figure has dropped by half.

Looking to the future, the IPCC projects that sea levels probably will rise; areas prone to drought may become drier, and extreme storms may become more common. Natural ecosystems such as wetlands and forests, many already under stress, will be taxed even further.

In the past, many in the United States have shrugged off these likely effects. They say that we can adapt by changing our crops, shifting our houses inland away from the approaching sea, and build-

ing dikes to channel flood waters and irrigation to quench parched lands. I say that view is dangerously mistaken, and I intend to lead the United States to take action that addresses the root causes of climate change.

It is true that Americans can probably adapt to most of the likely short-term effects of climate change. One hundred miles southwest of here, the city of Philadelphia is planning for the possible need to relocate intake pipes for the water supply. Builders of new power plants near the coast have, in some cases, installed the intake pipes for coolant water a few feet higher than normal—in anticipation of higher future sea levels. But it is a stretch to say that merely moving a few pipes will make us immune to climate change. Our coastal zones are already battered by storms; rising sea level will make matters worse. In the barrier islands off the Carolinas and Florida, big storms already cause billions of dollars of property damage.

In most of the rest of the world such adaptation is not so easy. In Bangladesh alone nearly ten million people live within three vertical feet of sea level; Bangladeshis already suffer floods and devastation from coastal storms. Elsewhere in the developing world, societies that are least able to adapt to a changing climate are those that are on the front lines. These problems are serious for these societies, and they will affect us in the industrialized world as well—by creating environmental refugees, breeding grounds for climate-related diseases, and other stresses that will contribute to the same despair that has animated terrorists who have struck the United States.

Even as we struggle to protect the built environment from changing climate, what will we do about nature? For many ecosystems the rate of change that is likely to occur as the world warms will be much more rapid than nature's ability to adjust. Scientists studying unique ecosystems adapted to mountainous cloud forests in Costa Rica have shown that as temperatures rise, the clouds, too, will move higher up the mountain. What happens when they reach the top—when the clouds no longer shroud the forest? The cloud forest ecosystem disappears; butterflies and nature's

other marvels go extinct. Ecologists are uncovering similar, detailed stories of stress and extinction everywhere that they look. Some have even suggested that perhaps one-third of species worldwide could go extinct in the coming century from the effects of global warming alone. That sounds abstract until you realize that coral reefs, wild forests, and many other gems of nature hang in the balance.

How should we evaluate such evidence? I worry that too many have focused on the integrity of the evidence itself. They have picked apart the studies by asking questions whose answers are not knowable. How do we know that the butterflies at the edge of extinction on one mountain do not survive somewhere else? Are we certain that exactly these effects will unfold in fifty years? What if some bird gets to the weakened butterflies first—are we, then, to blame for extinction? How do we know that future generations won't invent some clever device that will let us clone or move the butterflies to other mountains?

These are important questions. The nature of science is skepticism, and we must encourage scientists to turn every stone, question every fact, and re-question every hypothesis. We must be careful not to silence the skeptics—their criticism will make the science better.

But we, as planetary citizens, must also recognize the cost of indecision. Information is not free, and in this case the cost of waiting until all the facts are in is high indeed.

The very nature of the climate problem is one of uncertainty; the best information that we can expect is not declarative but a matter of probabilities. Climate change shifts the odds, but we will never be able to say that a particular hot summer or a particular extinction is the result of changing climate. It sounds like special pleading until you realize that practically every major decision taken by governments and firms is rooted in incomplete information.

Even more important than uncertainties are the irreversible effects. Not only are we saddling future generations with our effluent, but if they decide that they would have liked a world in which we did not drive to extinction one-third of nature's diversity there is

nothing they can do to rewind the tape of history and play it again without our bad policies. It isn't right to impose those costs on the future. God did not put us on Earth to play dice with His legacy.

These factors taken together—the vulnerability of the world's poorest, the risk of catastrophic change, and our immoral legacy—are why we must eliminate the threats of climate change at their root. We must loosen and release the human grip on climate.

Carbon dioxide is the main cause of climate change, and most of that comes from burning fossil fuels such as coal, oil, and natural gas. Today, world emissions of carbon dioxide are about twenty-four billion tons per year, and they have been rising at nearly 1 percent per year on average for the last decade. As emissions rise, so does the concentration of carbon dioxide in the atmosphere. Today the atmosphere has about 380 parts per million of carbon dioxide—already one-third higher than the level at the onset of the industrial era.

A growing chorus of analysis suggests that the world should aim to stabilize the concentration at a level no higher than about 550 parts per million. To meet that goal we must not just slow the rise in emissions, we must actually reverse course—emissions must eventually be about 60 percent *lower* than they are today. And we must do that while allowing enough space in the global emission budget for the needs of developing countries. The United States and other industrialized nations have already amply used their shares of this budget; we must make a larger effort than the developing world. But all must play a role.

That level—550 parts per million—seems a long way off, but it is closer than you think. The climate system and the industrial energy system both have enormous inertia. To hit the 550 parts per million target by the end of the century, our trajectory of emissions must start shifting today—a little bit now, and a lot by 2020 and beyond. For the United States and other countries that must take the first steps, that means acting now: we must start by improving the efficiency of our existing energy system while laying the groundwork for a more radical transformation.

Few of the choices will be easy. For example, we must have debates about nuclear power—do we want more reactors, and where? Do we want more windmills and other carbon-free renewable power sources? If we build more gas-fired power plants in countries like the United States where gas is already scarce, where will we get the gas? Obtaining politically and economically viable answers to these questions takes time.

Every year that we wait to confront these questions is another year we lock ourselves into the old paradigm. Yet we know that business as usual is not sustainable. In 2003 the United States commissioned 402 new generating units with a total capacity of forty-four gigawatts. The largest of those plants will operate for thirty years; many will probably last even longer. The oldest grid-connected fossil fuel power plant in the United States was commissioned in the 1920s, and many small hydroelectric dams date from even earlier. We must be mindful of the durable consequences of our actions even today, and we must promote a similar awareness elsewhere in the world. Last year, China built thirty-two gigawatts of new power plants, and India built four gigawatts. The building will continue even more rapidly in the future. The International Energy Agency's authoritative *World Energy Outlook* suggests that two-thirds of the coal-fired electric power capacity that will exist in 2030 has not yet been built. Although we are locking in long-lived capital equipment, we still have room to maneuver if we act quickly.

Our response must be twofold. We must create a viable international institution for addressing the climate problem. And, within each nation, we must begin to implement concrete actions.

At the international level, I am mindful that the United States met a firestorm of criticism for leaving the Kyoto system. We did so because the Kyoto targets were not achievable. As the process of elaborating Kyoto's rules dragged on into 2001, the gap between U.S. emissions and the Kyoto limits grew so large that no viable policy could have delivered compliance for the United States. In that context, and with no comparable limits on emissions from developing countries, no American administration could have gained

the legislative approval needed to put Kyoto into force. We bit off more than we could chew, and in that respect the United States was not alone. All nations have learned from the Kyoto experience. Continuing the effort in good faith is more important than whether our first try at creating an effective global institution to address one of the most complex issues on the international agenda was completely successful.

Looking to the future, we know that Kyoto is important for many other nations. We also know that Kyoto is the only established institution for addressing the climate issue. Thus today I am instructing our diplomats to engage fully with the Kyoto process, with the aim of achieving a viable plan for the United States to rejoin a system of binding commitments modeled after the Kyoto Protocol.

America's reengagement with Kyoto comes with strings attached. We will demand solutions to the flaws in the original Kyoto accords, and we will work with the community of nations to find fair and effective remedies. As we work to fix Kyoto, we will be mindful that well-meaning diplomats tried to achieve too much in the short term even as the Kyoto framework has proved to be woefully inadequate for the long term. We must rectify that imbalance. What matters most is a credible signal for long-term change. Our effort to establish long-term credibility requires achievable short-term milestones and accomplishments. We are lucky that the consequences of climate change will unfold over decades—giving us time, if we start now, to transform the global economy with the normal pace of technological change.

America will rejoin the Kyoto process only with solutions in hand for Kyoto's three deficiencies.

First, the new Kyoto must contain realistic targets with no free rides. The United States accounts for one-quarter of global emissions and therefore must do its share. Many, especially in this august body, have criticized America for its large environmental footprint, claiming that our consumer culture guzzles energy and intrinsically harms the environment. The reality is that America's emissions relative to economic output—what is often called "emission intensity"—are in line with those of most other nations. They are

a bit higher than those of France and Japan, mainly because we use less nuclear power. They are lower than those of China, India, and South Africa. Like that of most nations, U.S. emission intensity is declining steadily over time.

The United States emits one-quarter of the world's carbon dioxide because we account for one-quarter of the world's economic output. Economic activity is not the enemy; it is essential to human welfare and to the technological innovation that is needed for an effective solution to the climate problem. It is the bedrock of development. What matters here is the trajectory of emissions—the path of emissions over time, and our success in decoupling emissions from economic growth. Every nation on Earth must strive for a low—eventually almost zero—emission intensity. We must have vibrant economies while stabilizing atmospheric concentrations at a safe level.

Reaching that safe level requires binding and stringent emission caps. That was the vision in Kyoto, and it must be the central element of an improved treaty as well. Voluntary limits are not enough.

With binding caps in place we can create an international emission trading system so that governments can meet the goal of protecting climate at the lowest possible cost. That concept was built into Kyoto and it must be reinvigorated.

In the new Kyoto we must also confront, head on, a subject that has been taboo: commitments for developing countries. As long as the community of developing nations is unified in rejecting any limits on emissions there will be no substantial progress in addressing the climate problem. And that is bad news especially for developing countries, as they—like most nations—stand to lose from unchecked global warming.

It will not be practical to set limits on emissions from all developing countries immediately. The wealthiest and largest must go first and clear a path for others. For those that do not adopt binding caps on their emissions we must find other ways of engagement so that they nonetheless have an incentive to reduce emissions and attract low-carbon technology and investment. In

rejoining Kyoto, the United States will work to rewrite the rules for the Clean Development Mechanism so that it is more flexible and less bureaucratic. We are especially concerned that the present mechanism's rules provide few incentives to protect tropical forests, which are disappearing at a swift rate, a fact that is responsible for perhaps 20 percent of all the world's emissions of carbon dioxide.

Second, the new Kyoto must set realistic and meaningful long-term goals. No firm or government can plan a rational investment strategy without a star on the horizon to guide the effort. Over the last few months my administration has undertaken a comprehensive review of its policy strategy on global warming, and I have met personally and confidentially with the leaders of major energy companies. Most have expressed to me the need for clarity about goals. They say that if our climate policy consists of cutting emissions by possibly a few percent every five years then they will not much alter their business plans. They will install technologies that are a bit more efficient because energy efficiency, to a point, is the cheapest source of carbon savings available. They will invest in projects overseas where substantial reductions in emissions are achievable at very low cost.

But we must signal that our goal is a radical reduction in emissions, requiring a greater response from business. Even today, if our aspirations were clear, some utilities would build new nuclear plants while others would invest in larger wind farms. A clear and credible vision would uncork innovation in zero-carbon energy systems, such as the elements of a hydrogen-based energy system. Some firms are investing in these futures, but the effort is much too tentative. The job of government is not to pick the winners in this battle for new energy systems; rather, our task is to set and enforce the goals.

In setting goals we must send a clear and unambiguous message: we seek nothing less radical than the decarbonization of the world economy. We will need fifty years or longer to achieve that goal. I commend Britain's prime minister for outlining a vision for the transformation of his nation's economy; the U.S. government, in the coming months, will do the same.

I propose that we start with 550 parts per million of atmospheric carbon dioxide as a goal. We should write that number prominently into the new Kyoto agreement, and we should also create a process for evaluating and adjusting that goal regularly. Whenever we set emission targets we should convene a group of experts—with the help of the Intergovernmental Panel on Climate Change—to tell us whether the emissions pathways we are envisioning are consistent with our goals. I know that this statement will be seen by many, especially in the scientific community, as foolhardy. How do we know that 550 parts per million is safe? We don't, and we may never know what is safe. But we do have a good idea about the rates and magnitude of change implied by this target, and I am confident that the 550 goal is achievable at acceptable cost.

I can assure you that once we have penciled in this number, a flood of studies will follow to show why it is deficient. That, exactly, is the dialectical process that we must inspire.

Third, the new Kyoto must recognize that the only viable way to decarbonize the economy is to develop and install new technologies. Even with a credible long-term goal, the needed investment will not flow automatically. Many of the new ideas that will be needed to decarbonize the economy are public goods—everyone in the world will benefit from these new ideas, but no single firm or government can justify the costly investment on its own. We know that society tends to underinvest in knowledge and other public goods, and in this case the underinvestment is truly global.

In the present Kyoto regime there is no reward for nations that invest in such public goods. Indeed, a system that sets new targets every five years actually discourages some technological investments because a nation that lowers its emission trajectory puts itself at a disadvantage for later rounds of negotiations. We must eliminate these perverse incentives and create a strong, direct incentive for productive investment in new technology.

Our leaders in business and government must work together to set the exact form of this technology investment program. At minimum, a credible technology strategy will require govern-

ments not only to subsidize the development of new technologies; they must also cap emissions so that there is a strong incentive for firms to deploy new technologies. We must establish a process of peer review that encourages each nation to look closely at the technology investment plans in the private and public sectors of other countries so that a better, coordinated international strategy emerges. We must create international mechanisms for collaborative research on new large-scale technologies, such as strategies for making clean renewable power widely available. And we must not forget the continual need for the invention and application of technologies that boost energy efficiency.

In addition to invigorating a new Kyoto, my administration is also committing the United States to a more aggressive course of domestic policy. We will demonstrate our dedication to creating an effective international response through our own substantial response at home. Our policy will include five major elements.

First, we will complete the installation of an effective voluntary system for registering reductions in emissions. We need stricter accounting standards so that this registry does not simply reward firms for projects they would have undertaken anyway. A voluntary approach is not enough, but it is what we have right now. It is available immediately to help jump-start a mandatory, economy-wide response. My administration will explore whether firms that make reductions now might get special allocations in a future emission trading system, which would create a strong incentive for early action.

Second, the U.S. government will encourage—where it can—the many special programs that encourage low-cost ways to control emissions. I am always amazed when I hear stories such as the ability of BP to cut its emissions of carbon dioxide by 10 percent while actually creating $650 million in new value for the firm's shareholders. In economics you learn that there aren't any $100 bills lying on the street because if there were, people would pick them up. From my experience talking with industry leaders, the street is filled with $100 bills, and we just need to learn how to find and grab them. Some firms are already doing this. Government can help with infor-

mational programs that aid other firms in starting the search. Government—including local government—can also help households with the search. About one-third of the energy consumed in the United States is used in households, and many studies have shown that homeowners are typically unaware of how they can save money (and cut emissions) through more efficient appliances, upgraded insulation, low-energy lighting, and other simple changes.

Third, my administration will introduce legislation to create a binding emission trading system for all significant sources of carbon dioxide in the United States. Senators John McCain and Joe Lieberman have proposed such legislation; I will work with them to build on their efforts.

Our binding trading system will start with carbon dioxide because it is the easiest to measure, but we will include other gases in the future as it becomes easier to monitor them reliably—exactly as the European Union is doing in its own emission trading system. Until then, we will regulate these other gases through effective voluntary and mandatory programs that we have already demonstrated in practice. They include the Environmental Protection Agency's programs to encourage capture of methane from landfills, its partnership with the aluminum industry for reducing emissions of strong greenhouse gases called perfluorocarbons, its "Gas Star" program that has worked with the gas industry to cut venting and leaking from the nation's natural gas infrastructure, and many other programs.

We must put a priority on finding ways to measure and reward those who alter land use practices so that soils store more carbon. Enormous quantities of carbon and topsoil have been lost from deep plowing and runoff; yet there is good evidence that widespread use of "no till" farming as well as better forest management practices can boost the ability of land to sequester carbon in the soils and in plants. Success in such efforts will broaden the coalition of those who favor action to include the many states in America that are rich in farms and forests.

Fourth, we will redouble our investment in new technology. We will expand our programs to develop and deploy renewable power and ultra-efficient energy systems. The United States has also launched programs to develop the technologies that will be needed for a zero-carbon hydrogen energy system, and we welcome the many private initiatives in this area as well. From India to Iceland we have found enormous interest in joint international exploration of this promising hydrogen future. Governments that are serious about addressing the climate change problem know that technology is the key. I am encouraged by evidence that hard-nosed venture capitalists are also putting more money into clean energy systems.

With industry, the U.S. government is supporting the demonstration of an advanced coal gasification power plant—what we call FutureGen—that will make it possible to generate electricity from coal while capturing and sequestering the carbon dioxide underground. If we apply that technology to burning biomass we could create the world's first substantial energy source that has negative emissions of carbon dioxide. Growing biomass removes CO_2 from the atmosphere, and the FutureGen approach can then park the carbon away forever.

These are a start. The U.S. government will spend $4 billion on incentives to apply climate-friendly technologies this year. We will do more. We also expect that private sector firms will do more—much more—when they see a credible signal that the world and the United States are serious about cutting carbon. We must realize that effective technology policy requires strong incentives for business to put new technologies into practice. A binding cap on emissions is that incentive.

Fifth, we will continue to invest in scientific research on the causes and consequences of climate change because sound science is essential to sound policy. Already the United States spends about $2 billion per year on climate science. We fly satellites and plumb the depths of the oceans for clues about past, current, and future climates. Nearly all that work is done in partnership with other nations. We contribute mightily to the Intergovernmental Panel on Climate Change. While sustaining and increasing this invest-

ment, we must also be sure that the many uncertainties in the science do not become an excuse for inaction. We must look at the likely effects of climate change, and we must be especially focused on spotting the possibly catastrophic consequences. More work is needed to understand and predict those effects, as they will dominate our attempts to avoid danger by setting and sustaining a safe level of greenhouse gases in the atmosphere.

Finally, I must emphasize that America knows that climate change does not allow America to be a political island. We must engage with other nations in truly collaborative fashion.

Two decades ago, this body—the United Nations General Assembly—created a commission to study the fate of the global environment. The result, chaired by Norwegian Prime Minister Gro Brundtland, was an impressive report that bears revisiting. It offers a vision for improving human welfare while also protecting the environment, which it called "sustainable development." The Brundtland Commission argued that the environment and the economy were complementary, not contradictory. "Our common future," the commission said, required assuring that each generation passes the planet to the next with its vital resources intact.

We must reaffirm the Brundtland vision by addressing the danger of climate change with a truly global and long-term strategy that befits the problem at hand. If we are to ensure our prosperity for our children we must not wait. I stand before you to assure you that, when focused on effective solutions to climate change, the United States will be at the forefront in reinvigorating that global effort.